

What is Claimed is:

1. A rotary bit for rubblizing the material around a utility access cover and ring down to the flange of the ring by rotary grinding, comprising a cylindrical central core having an inside diameter that is larger than the outside diameter of the ring and at least one carrier having an attachment surface extending beyond the outside diameter of the central core with a plurality of rubblizing teeth attached to and extending below the attachment surface.
2. A bit in accordance with claim 1 wherein some of the rubblizing teeth extend below the flange when the bit is in contact with the flange.
3. A bit in accordance with claim 2 wherein the carrier comprises a mounting plate at the top for attaching to the central core, a vertical plate that extends down the outside surface of the cylindrical central core, and an attachment plate extending out from the vertical plate near the bottom on the central core and providing the attachment surface for the teeth.
4. A bit in accordance with claim 3 wherein the mounting plate is permanently attached to the central core.
5. A bit in accordance with claim 4 wherein the mounting plate is welded to the top of the central core.
6. A bit in accordance with claim 3 wherein the mounting plate is bolted to the top of the central core.
7. A bit in accordance with claim 3 wherein the plurality of teeth include a first row of teeth mounted near the outside edge of the attachment plate and angled forward toward the direction of rotation of the bit and angled outwardly with the tips of the teeth extending beyond the outer edge of the attachment plate.
8. A bit in accordance with claim 7 wherein the plurality of teeth include a second row of teeth inside the outside row of teeth and having tips above the tips of the outside row.
9. A bit in accordance with claim 8 wherein teeth are attached to the bottom of the attachment plate between the second row and the central core.

10. A bit in accordance with claim 9 wherein the central core is open at the bottom and has a surface around the bottom and further comprising a plurality of teeth attached to the surface.
11. A bit in accordance with claim 10 wherein the tips of the teeth in the second row extend below the tips of the teeth on the bottom surface of the central core and the tips of the teeth of the first row extend below the tips of the teeth in the second row.
12. A rotary bit for rubblizing the material below the flange of the ring of a manhole and down to below the top of the cone of the manhole comprising a cylindrical central core having teeth on a surface at the bottom of the cylinder, the central core having an inside diameter that is greater than the outside diameter of the cone.
13. A bit in accordance with claim 12 further comprising a plurality of carriers, each having a horizontal attachment plate extending out from the central core and positioned at a selected distance from the top of the central core, a plurality of teeth attached to the underside of the attachment plate for grinding a step in the surface of the roadway beyond the outside diameter of the central core.
14. A rotary bit having a cylindrical central core open at the bottom, a horizontal attachment plate extending a selected distance beyond the outside diameter of the central core, a plurality of teeth attached to the underside of the attachment plate.
15. A bit in accordance with claim 14 further comprising teeth on the bottom surface of the central core to grind into the material around the ring to stabilize the bit in use.
16. A bit in accordance with claim 15 wherein the selected distance is 12 inches.
17. The method of setting manhole covers, the manhole having a cone, a ring and a cover, comprising the steps of rubblizing the material around the ring and cover by a rotary grinder and removing the rubblized material to form an excavated area around the ring.
18. The method in accordance with claim 17 wherein the grinding rubblizes the material down to at least the flange of the ring.
19. The method in accordance with claim 18 wherein the rubblized material is removed by sucking the rubble out with a vacuum.
20. The method in accordance with claim 19 wherein the rubble is removed while the grinding is taking place.

21. The method in accordance with claim 17 comprising the further step of grinding down below the top surface of the cone to rubblize the material below the material rubblized in the first grinding step.
22. The method in accordance with claim 21 further comprising the step of removing the rubblized material below the material rubblized in the first grinding step.
23. The method in accordance with claim 22 wherein the rubblized material is removed by sucking up the material with a vacuum.
24. The method in accordance with claim 22 comprising the further step of removing the ring, cover and any height adjusting material from the excavated hole.
25. The method in accordance with claim 24 comprising the further steps, knowing the distance between the top surface of the ring and the bottom surface of the flange on the ring, inserting a height adjusting conical form on the top surface of the cone, placing a cutter inside the form with the depth of the cutter referenced to the surface of the roadway, cutting the form at a height determined to place the top of the ring aligned with the surface of the roadway, removing the cutter and the top cut portion of the form, inserting the ring and cover on top of the form and filling the evacuated area around the top of the cone, form and ring to the surface of the roadway.
26. The method of claim 25 wherein the filling step includes pouring concrete into the area up to the level of the bottom of the flange and filling the rest of the area with asphalt.
- 27.. The method in accordance with claim 25 wherein the area is filled with concrete to the surface of the roadway.
28. The method in accordance with claim 25 wherein the area is filled with asphalt to the surface of the roadway.
29. The method in accordance with claim 21 further comprising the step of milling the road surface to a selected depth and out a selected distance from the outside diameter of the hole.
30. The method in accordance with claim 29 wherein the milling is performed during the step of drilling down beyond the top of the cone.
31. The method of claim 29 comprising the further step of filling the area milled with the same material as the roadway.

32. The method of milling around an access ring and cover comprising the steps of grinding a hole around the ring to stabilize and position the milling bit and milling out a selected distance and depth by grinding the material with a rotating bit.
33. Apparatus for setting utility covers comprising a rubblizing bit comprising means for grinding the material into small pieces around the utility access cover and ring and down to a selected depth and means for sucking out the small pieces.
34. A trimmer bit for milling around a ring and cover of a utility access for resurfacing the roadway around the access comprising a central core with teeth to position and stabilize the trimmer and teeth attached to an attachment plate extending out a selected distance from the core.

AMENDED CLAIMS

[received by the International Bureau on 20th December 2004 (20.12.04);
original claims 12-14, 17, 21, 22 replaced by amended claims 1, 3, 12, 13, 16, 19, 20;
original claim 19 cancelled; new claim 33 has been added]

1. A rotary bit for rubblizing the material around a utility access cover and ring down to the flange of the ring by rotary grinding, comprising a cylindrical central core having an inside diameter that is larger than the outside diameter of the ring and at least one carrier having an attachment surface that is perpendicular to the outside surface of the cylindrical central core and extending beyond the outside diameter of the central core with a plurality of rubblizing teeth attached to and extending below the attachment surface.
2. A bit in accordance with claim 1 wherein some of the rubblizing teeth extend below the flange when the bit is in contact with the flange.
3. A bit in accordance with claim 2 wherein the carrier comprises a mounting plate at the top for attaching to the central core, a vertical plate that extends down the outside surface of the cylindrical central core, and an attachment plate extending out at a 90° angle from the vertical plate near the bottom on the central core and providing the attachment surface for the teeth.
4. A bit in accordance with claim 3 wherein the mounting plate is permanently attached to the central core.
5. A bit in accordance with claim 4 wherein the mounting plate is welded to the top of the central core.
6. A bit in accordance with claim 3 wherein the mounting plate is bolted to the top of the central core.
7. A bit in accordance with claim 3 wherein the plurality of teeth include a first row of teeth mounted near the outside edge of the attachment plate and angled forward toward the direction of rotation of the bit and angled outwardly with the tips of the teeth extending beyond the outer edge of the attachment plate.
8. A bit in accordance with claim 7 wherein the plurality of teeth include a second row of teeth inside the outside row of teeth and having tips above the tips of the outside row.

9. A bit in accordance with claim 8 wherein teeth are attached to the bottom of the attachment plate between the second row and the central core.
10. A bit in accordance with claim 9 wherein the central core is open at the bottom and has a surface around the bottom and further comprising a plurality of teeth attached to the surface.
11. A bit in accordance with claim 10 wherein the tips of the teeth in the second row extend below the tips of the teeth on the bottom surface of the central core and the tips of the teeth of the first row extend below the tips of the teeth in the second row.
12. A rotary bit for rubblizing the material below the flange of the ring of a manhole and down to below the top of the cone of the manhole comprising a cylindrical central core having teeth on a surface at the bottom of the cylinder, the central core having an inside diameter that is greater than the outside diameter of the cone, a plurality of carriers, each having a horizontal attachment plate extending out from the vertical cylindrical surface of the central core and positioned at a selected distance from the top of the central core, a plurality of teeth attached to the underside of the attachment plate for grinding a step in the surface of the roadway beyond the outside diameter of the central core.
13. A rotary bit having a cylindrical central core with an outside surface and open at the bottom, an attachment plate extending a selected distance beyond the outside diameter of the central core and at a 90° angle to the outside surface of the cylindrical core, and a plurality of teeth attached to the underside of the attachment plate.
14. A bit in accordance with claim 13 further comprising teeth on the bottom surface of the central core to grind into the material around the ring to stabilize the bit in use.
15. A bit in accordance with claim 14 wherein the selected distance is 12 inches.
16. The method of setting manhole covers, the manhole having a cone, a ring and a cover, comprising the steps of rubblizing the material around the ring and

- cover by a rotary grinder and removing the rubblized material by a vacuum machine to form an excavated area around the ring.
17. The method in accordance with claim 16 wherein the grinding rubblizes the material down to at least the flange of the ring.
 18. The method in accordance with claim 16 wherein the rubble is removed while the grinding is taking place.
 19. The method in accordance with claim 17 comprising the further step of grinding down below the top surface of the cone to rubblize the material below the material rubblized in the first rubblizing step.
 20. The method in accordance with claim 19 further comprising the step of removing the rubblized material below the material rubblized in the first rubblizing step.
 21. The method in accordance with claim 20 wherein the rubblized material is removed by sucking up the material with a vacuum.
 22. The method in accordance with claim 20 comprising the further step of removing the ring, cover and any height adjusting material from the excavated hole.
 23. The method in accordance with claim 22 comprising the further steps, knowing the distance between the top surface of the ring and the bottom surface of the flange on the ring, inserting a height adjusting form on the top surface of the cone, placing a cutter inside the form with the depth of the cutter referenced to the surface of the roadway, cutting the form at a height determined to place the top of the ring aligned with the surface of the roadway, removing the cutter and the top cut portion of the form, inserting the ring and cover on top of the form and filling the evacuated area around the top of the cone, form and ring to the surface of the roadway.
 24. The method of claim 23 wherein the filling steps include pouring concrete into the area up to the level of the bottom of the flange and filling the rest of the area with asphalt.
 25. The method in accordance with claim 23 wherein the area is filled with concrete to the surface of the roadway.

26. The method in accordance with claim 23 wherein the area is filled with asphalt to the surface of the roadway.
27. The method in accordance with claim 16 further comprising the step of milling the road surface to a selected depth and out a selected distance from the outside diameter of the hole.
28. The method in accordance with claim 27 wherein the milling is performed during the step of drilling down beyond the top of the cone.
29. The method of claim 27 comprising the further step of filling the area milled with the same material as the roadway.
30. The method of milling around an access ring and cover comprising the steps of grinding a hole around the ring to stabilize and position the milling bit and milling out a selected distance and depth by grinding the material with a rotating bit.
31. Apparatus for setting utility covers comprising a rubblizing bit as means for grinding the material into small pieces around the utility access cover and ring and down to a selected depth and means for sucking out the small pieces.
32. A trimmer bit for milling around a ring and cover of a utility access for resurfacing the roadway around the access comprising a central core with teeth to position and stabilize the trimmer and teeth attached to an attachment plate extending out a selected distance from the core.
33. The method of removing the material above a cone of a manhole comprising the steps of rubblizing the material above the cone and out a selected distance beyond the outer periphery of the top of the cone and removing the rubblized material by a vacuum machine.

STATEMENT UNDER ARTICLE 19(1)

Claim 1, as amended, now specifies features that are not disclosed in any of the cited prior art patents. None of the prior art patents disclose a carrier having an attachment surface that is perpendicular to the outside surface of the cylindrical central core and that extends beyond the outside diameter of the central core with a plurality of rubblizing teeth attached to and extending below the attachment surface.

The Applicant has reviewed the European patent EP1182299 to Jürgen Stehr and has noted that the Stehr device disclosed in this patent is directed to a drilling bit that has a conical surface rather than a bit with a central core and teeth on a horizontal surface relative to the vertical outer surface of the cylindrical central core.